TECHNOLOGY AND EFFICIENCY OF DRYING MELONS IN A PNEUMO-DRYER

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Abstract: Melon is an important food product for the human body, containing many beneficial substances, including vitamins, minerals and natural sugars. Therefore, it is important to store melon for a long time and supply it in accordance with market requirements. The traditional method of drying in the sun takes a long time, can negatively affect the quality of the product and depends on environmental conditions. Therefore, the use of modern drying technologies, including pneumatic dryers, is one of the current issues. This article presents the results of a study on the technology of drying melon using a pneumatic dryer, its efficiency and energy consumption.

Keywords: Pneumatic dryer, technological parameters, moisture before and after drying, drying methods.

Аннотация: Дыня является важным продуктом питания для организма человека, содержащим множество полезных веществ, в том числе витамины, минералы и натуральные сахара. Поэтому важно хранить дыню длительное время и поставлять ее в соответствии с требованиями рынка. Традиционный способ сушки на солнце занимает много времени, может негативно влиять на качество продукта и зависит от условий окружающей среды. Поэтому использование современных технологий сушки, в том числе пневматических сушилок, является одним из актуальных вопросов. В данной статье представлены результаты исследования технологии сушки дыни с использованием пневматической сушилки, ее эффективности и энергопотребления.

Ключевые слова: Пневматическая сушилка, технологические параметры, влажность до и после сушки, методы сушки.

Introduction. The study was conducted using a pneumatic dryer. The drying process was carried out based on the following technological parameters:

• Temperature: Controlled within the range of 50-70°C, which helped preserve the natural flavor of the melon.

• Air velocity: Set at 5-10 m/s, which ensured fast and uniform drying of the product.

• Drying time: Lasted 3-5 hours, which required significantly less time than traditional methods.

• Moisture content: The initial moisture content was 80-85%, which was reduced to 10-15% during drying.

Discussion. The moisture content of the melon samples before and after drying was determined and their effect on product quality was studied. The effect of the drying process on nutrients and energy consumption was also evaluated.

The results of the study showed that the process of drying melon using a pneumatic dryer has several advantages over traditional methods:

• Fast drying: The melon dried using a pneumatic dryer dried 2-3 times faster than traditional methods.

• Improved quality: The color, aroma and taste of the product were preserved during the drying process.

• High nutritional value: Vitamins and natural carbohydrates were well preserved, and the nutritional content of the melon remained almost unchanged.

• Energy saving: Less energy was consumed during the drying process, which allowed to reduce production costs.

Also, the physical and chemical composition of the melon dried in a pneumatic dryer was analyzed, and the results showed the following indicators:

• The volume of the product decreased by 60-70% during the drying process.

• The natural sugar content was preserved.

• The antioxidants contained in the product remained unchanged.

The results obtained confirm that the pneumatic dryer is very effective for drying melon. In traditional sun drying, sunlight, dust, and environmental conditions negatively affect the quality of the product. This causes the melon to change color and lose nutrients. A pneumatic dryer provides a stable temperature and airflow, preserving the quality of the product.

The study shows that melon dried using a pneumatic dryer:

• Has high quality, while maintaining good taste and aroma.

• Is suitable for industrial production due to its fast drying.

• Can meet market demand and consumer quality requirements.

In addition, pneumatic drying technology can be used in large agroclusters and small and medium-sized businesses. This method increases the possibility of exporting agricultural products and obtaining additional income from them.

Conclusion. The technology of drying melon using a pneumatic dryer has significant advantages over traditional methods. Its advantages are explained by the following:

• The drying process is faster.

• The nutritional value of the product is well preserved.

• Energy consumption is low, which reduces production costs.

• The quality of the product is high, increasing its competitiveness in the market.

In the future, it would be appropriate to further improve this technology, optimize drying parameters, and expand research on its application to new melon varieties.

The results of this study will be useful for industrial enterprises and entrepreneurs, opening up a wide range of innovative melon processing methods.

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